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ABSTRACTS

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(Pages refer to the Japanese originals of this volume unless otherwise noticed)

The Distribution of α -Sorinin and α -Sorigenin.

(pp. 109~111)

By Zirô NIKUNI.

(Agr. Chem. Laboratory, Tokyo Imp. Univ. Received Jan. 17, 1939.)

The author discovered a new glycoside from the bark of Kuroumemodoki and named it " α -sorinin" (Bulletin of Agr. Chem. Soc. of Japan; **14**, 25~26, 1938). This glycoside consists of primverose and an aglycon " α -sorigenin".

The aglycon α -sorigenin exists not only as a component of the glycoside but also in a free state. It was proved as follows:

The fresh bast fibre of Kuroumemodoki was boiled with 90~95% alcohol. On evaporation of alcohol yellowish fine crystals were precipitated. Dried crystals were extracted repeatedly with absolute alcohol. Upon this the glycoside remains insoluble. The yellowish brown absolute alcoholic solution was evaporated to small quantity and left overnight. Fine yellowish needles were crystallized out. These crystals dissolve in organic solvents, turn dark green by ferric chloride solution and become brown by the sunlight. This is the crude α -sorigenin.

The crude α -sorigenin was purified as diacetyl- α -sorigenin, and recovered from it as pure α -sorigenin.

3 g of the crude crystals and the same amount of Na-acetate were boiled with 60 cc of acetic acid anhydride and poured into 800 cc of ice water. The crude acetyl compounds thus obtained were recrystallized from glacial acetic acid and then twice from acetic ether. Almost colourless fine needles were obtained. M. p. 257~258.5°. No depression of melting point was observed when mixed with pure diacetyl α -sorigenin.

0.3 g of this diacetyl- α -sorigenin was warmed for 3 hours on water bath with 100 g of 2.5% sulphuric acid alcoholic solution. Thus the colourless needles were obtained. M. p. 225°. Mixed melting point with pure α -sorigenin was also 225°.

The analytical results of these compounds were as follows:

Diacetyl- α -sorigenin	C%	H%	OCH ₃ %
observed	62.36	4.76	8.57
calculated as C ₁₃ H ₈ O ₅ (CH ₃ CO) ₂	61.79	4.27	9.39
α -sorigenin	C%	H%	
observed (air dry)	58.85		4.63
calculated as C ₁₃ H ₁₀ O ₅ ·H ₂ O	59.09		4.54
observed (dried at 100°)	62.82		4.14
calculated as C ₁₃ H ₁₀ O ₅	63.39		4.09

Then the amounts of α -sorinin and α -sorigenin contained in the trees from different districts at different seasons were examined.

The trees were the following 3 species.

- (1) Kuroumemodoki (*Rhamnus japonica*, Max. var. *genuina*, Max.)
- (2) Kobano-kuroumemodoki (*R. japonica*, Max. var. *decipiens*, Max.)
- (3) Kurotubara (*R. dahurica*, Pall. var. *nipponica*, Makino)

Species of tree	Growing district	Season	Bast fibre	Crude α -sorinin	Crude α -sorigenin
(1), (2)	Titibu	Autumn	1240 g	20.1 g (1.62%)	33 g (2.66%)
" "	"	"	3500 g	55 g (1.57%)	28 g (0.80%)
" "	"	Spring	3770 g	35 g (0.94%)	45.5 g (1.18%)
(2)	Tiba	Winter	1050 g	3.8 g (0.36%)	21.8 g (2.07%)
(1)	Aomori	Spring	4190 g	12.7 g (0.30%)	14.2 g (0.33%)
(1)	"	Autumn	5320 g	18.1 g (0.34%)	24.5 g (0.46%)
(3)	Morioka	"	1070 g	—	—

The glycoside α -sorinin exists only in *Rhamnus japonica*, and the amount is most abundant in the trees from the Titibu Experimental Plantation of Tokyo Imp. Univ., especially in autumn.

The author expresses his sincere thanks to Prof. B. Suzuki for his kind guidance throughout this work.

Statistic Studies of Soils.

(pp. 112~114)

By Dr. MISU-Hideo.

(Agricultural Experiment Station, Government General of Tyosen, Received June 24, 1938.)

On the Manufacture of Alcohol from Jerusalem Artichoke. (Part IX.)

(pp. 115~127)

By Toshinobu ASAI and Susumu KIKUCHI.

(Agricultural Chemical Laboratory, Morioka Agricultural College, Japan,

Received Nov. 14, 1938.)

A New Alkaloid in the Bulbs of *Narcissus Tazetta* L.

(pp. 128~132)

By Yoshijiro KIHARA.

(Tokyo Imperial University Received Dec. 17, 1938.)

Lycorin and tazettin have been found in the bulbs of *Narcissus Tazetta* L. Now a new alkaloid was isolated from *N. Tazetta*, by extracting the bulb with alcohol. The alcohol solution, which showed a remarkable violet fluorescence, was extracted with H_2O . The base was purified by precipitating with phosphotungstic acid, the precipitate decomposed with $Ba(OH)_2$, and the solution evaporated in vacuum into a syrup. When one drop of water was added, the syrup changed into a yellow mass. A light yellow needle was obtained by recrystallization from alcohol. It was named "suisenin". It melted at $229^\circ C$, and was given the formula $C_{17}H_{19}O_5N$. One CH_3O group, one OH group and one methylene-oxide group were proved in the molecule, but the presence of CH_3N group could not be observed.

Monomethyl-ester, m.p. $188^\circ C$, benzoylester, m.p. $196^\circ C$, hydrochloride, m.p. $180^\circ C$, picrate, m.p. $189^\circ C$ and Pt salt, m.p. $194^\circ C$, were prepared.

From the absorption spectrum and the chemical reactions the presence of isoquinoline nucleus was presumed.

A crystal was obtained when suisenin was oxidized with $KMnO_4$ in alkaline solution, and this crystal melted at $244^\circ C$, the formula $C_{12}H_{15}O_4N$ was given to it.

Suisenin may be an alkaloid having phenanthridin nucleus like lycorin or tazettin.

The Change of Oxidation-reduction Potentials of Water-logged Soils.

V. On the application of the green manures
in different stages of growth.

(pp. 133~138)

By Kisaburo SHIBUYA, Hideaki SAEKI and Kenhan RYU.

(Taihoku Imperial University. Received Dec. 19, 1938.)

On this occasion, the change of oxidation-reduction potentials was determined of water-logged soils, as these were mixed with green manures which were in different stages of growth. The soils taken for this investigation were a lateritic loam of Heichin and a clay derived from sandstone and shale of the University farm. Peas (*Pisum sativum* Linn.) and Sesbania (*Sesbania Sesban* (Linn.) Merrill) in young growing stages or sufficiently mature, were used as the green manures to be applied to the soils. The younger crops were more nitrogenous, while the matured plants were less so, being 8.7 or 11.2~11.8 of C/N quotient, respectively, from the analytical view point. This investigation should be compared with

the authors' previous information (Jour. Agr. Ch. Soc. of Japan, XIV, 35, 1938.) which reported the potential change of water-logged soils applied with protein or carbohydrate. After thoroughly mixing with pulp of the green manures, the soils in a certain number of glass cylinders were kept at 30°C under the water-logged condition and the potentials were determined every day at the beginning and every week at the later period of the experiment which was continued for 10 weeks.

In consequence, the younger or more nitrogenous plants reduced the soil potentials, while the matured or large C/N materials lowered the potentials to less extent and slightly raised them at the later period.

Doubtlessly, the green manures make the soil condition more or less reductive, according to the younger or the matured stages of their growth when they are applied into the soils.

Effects of Certain Minerals on the Growth of Root Nodule Bacteria. (Part 1)

(pp. 139~146)

By K. KONISHI, T. TSUGE and A. KAWAMURA.

(Institute of Agr. Chem., Imp. University, Kyoto, Received Jan. 17, 1939.)

Spectrographical tests revealed that P and Mg contents of soybean and lupine bacteria grown on yeast water mannitol were higher but Na content lower than those of the other organism tested, and that, so far as P content is concerned, data on quantitative procedure also emphasized the above suggestion.

Phosphoric acid was usually effective in stimulating the growth of the organism, while large amounts of lime present in culture media were unfavourable for the development of either soybean or lupine bacteria. Antagonism between lime and phosphoric acid was recognized in affecting the growth of clover and soybean organism.

Chemical Studies on the Kikyo-root. (Report V)

The method for the separation and purification of Kikyo-Saponin,
(Platycodin), and its properties.

(pp. 147~150)

By Magosaburo TSUJIMOTO.

(Kagoshima Imperial College of Agriculture and Forestry, Received Jan. 5, 1939.)

On the Determination of Exchangeable Lime in Calcareous Soil.

(pp. 151~155)

By R. KAWASHIMA.

(Agr. Chem. Laboratory, Kyushu Imperial University, Received Jan. 10, 1939.)

In this paper the determination of exchangeable lime in soils containing calcium carbonate in precipitated form is dealt with. The author has confirmed that in such cases both Hissink's and Chapman & Kelley's methods are quite inadequate; while Puri's ammonium carbonate solution method is suitable.

Studies on the Vegetable Tannins in Formosa.

(pp. 156~160)

By Yasuyosi Oshima and Yôsuke KANEKO.

(Agr. Chem. Dep., Taihoku Imp. Univ., Received Jan. 16, 1939.)

The tannin contents were determined by the international official method of the Society of Leather Trade Chemists, the chemical properties of tannins were studied qualitatively by the method of Stiasny and others, and the tannins were classified according to Stenhouse-Procter's system.

The results were as follows:

Plant names	Water %	Soluble matter %	Non-tannin %	Tannin %	Classification
Bark of					
<i>Acacia confusa</i> Merrill	13.3	22.3	11.1	11.2	catechol
<i>Trema orientalis</i> Blume	13.2	24.4	17.3	7.1	"
<i>Rhizophora mucronata</i> Lam.	21.7	26.0	8.6	17.4	"
<i>Psidium Guajava</i> Linn.	9.1	30.2	16.7	13.5	pyrogallol
<i>Albizia falcata</i> Backer ex Merrill	13.3	22.8	9.8	13.0	catechol
<i>Uncaria formosana</i> Hayata	21.7	11.3	5.7	5.6	"
<i>Uncaria selilosa</i> Benthams	8.9	24.4	15.1	9.3	"
Leaves of					
<i>Uncaria setilosa</i> Benthams	11.9	25.3	18.3	7.0	"
<i>Psidium Guajava</i> Linn	9.4	20.1	12.3	7.8	pyrogallol
<i>Lagerstroemia subcostata</i> Kochne var. <i>Hirtella</i> Kochne	11.5	32.5	19.2	13.3	"
<i>Thea sinensis</i> Linnaeus	10.4	40.1	26.0	14.1	catechol
Seeds of					
<i>Areca catechu</i> Linnaeus	11.5	18.2	5.3	12.9	"
Tubers of					
<i>Dioscorea Matsudai</i> Hayata	48.2	5.4	3.3	2.1	"
<i>Dioscorea cirrhosa</i> Loureiro	79.6	8.7	3.1	5.6	"

Decomposition Products of Substances Containing Uronic Acid. (III).

Reductive Acid.

(pp. 161~170)

By Kiyosi Aso.

(Tokyo Imperial University, Received Jan. 19, 1939.)

Saccharification of Starch with Organic Acids.

(pp. 171~176)

By Teijiro YABUTA and Kiyoshi Aso.

(Tokyo Imperial University. Received Jan. 17, 1939.)

Chemical Studies on Japanese Coccidae. (XXI).Unsaturated Fatty Acids of *Tachardina theae* Green et Mann.

(pp. 177~181)

By M. KAWANO and R. MARUYAMA.

(Laboratory of Ohsaka Factory of Sankyo Co. Ltd., Received Dec. 20, 1938.)

The Effect of Glutathione on Fever.

Biochemical Studies on Glutathione. The IXth Report.

(pp. 182~192)

By Masayoshi OGAWA.

(Department of Nutrition, College of Medicine, Nippon University,

Received Dec. 26, 1938.)

In the previous communication the author reported the glutathione contents of yeast preparations.

In the present report, he performed an experiment on the effect of glutathione (GSH, GS-SG), and cystein-HCl on fever, employing several rabbits which became feverish on account of intravenous glucose injections. Their temperature began to rise 2~3 hours after the injection reaching its maximum (not less than 40°C), after which it subsided to the normal level during the next 3~4 hours, while in the animals to which glutathione (GSH, GS-SG) or cystein-HCl 0.5~5.0 mg per kg of body weight was administered intravenously, fever abated within the first 2.2/3~3.1/2 hours; although it seemed to require about 4 times as much glutathione when it was administered under the skin.

From the above results the author concluded that: (i) the body temperature of the feverish animal subsided to the normal level by the action of the administration of glutathione or cystein-HCl. (ii) The average glutathione (GSH, GS-SH) requirement for the removal of fever seems to be about 0.5 mg per kg of body weight when administered intravenously, (iii) although in the case of hypodermic injection it seems to be about 2.0 mg per kg of body weight.

Blätteralkohol. III. Mitteilung.⁽¹⁾Riechstoffe der Gurken (*Cucumis sativus*, L.).

(pp. 193~195)

Von Sankiti TAKEI u. Minoru ÔNO.

(Aus d. Agriculturchem. Laborat. d. Universität Kyoto, Eingegangen am 28. Dez. 1938)

Da das aus Blätteralkohol (3-trans-Hexenol-1) synthetisch gewonnene 2-trans-6-trans-Nonadienal-1 (Veilchenblätteraldehyd)⁽¹⁾ einen an den Saft frischer Gurken erinnernden Geruch besitzt, vermuteten wir, dass voraussichtlich auch die Gurken ebendiese Substanz als Geruchsbestandteil enthalten würden.

Wir nahmen eine dementsprechende Untersuchung vor. Aus 144.7 kg frischer Gurken wurden durch Wasserdampfdestillation rund 2.5 g Rohöl gewonnen. Von diesem blieb nach der Reinigung mit Alkali und Säure 1.5 g stark nach Gurken-saft riechendes Öl zurück. Bei der Fraktionierung dieses Öles wurde ein geringer Teil (ca. 10%) bis auf 80°/4 mm und ein grösserer Teil (ca. 60%) bis auf 100°/4 mm abdestilliert. Der Destillationsrückstand (ca. 30%) war geruchslos. Die erste Fraktion besteht aus 2-trans-6-trans-Nonadienal-1 (Semicarbazon, Schmp. 157°; 2,4-Dinitrophenylhydrazon, Schmp. 113°), die zweite aber enthält hauptsächlich 2-trans-6-trans-Nonadienol-1 (4'-Joddiphenylurethan, Schmp. 137°; Allophanat, Schmp. 140°).

Hieraus also geht klar hervor, dass bei den Riechstoffen der Gurken, der Qualität nach, 2-trans-6-trans-Nonadienal-1 vorherrscht, der Quantität nach aber, in der Hauptsache der diesen Aldehyd entsprechende Alkohol in Frage kommt. Somit möchten wir diesen früher synthetisch erzeugten Alkohol, 2-trans-6-trans-Nonadienol-1, in praktischer Weise als "*Gurkenalkohol*" bezeichnen.

LITERATUR.

- (1) II. Mitteilung: J. Agr. Chem. Soc., **14**, 717 (1938).

On the Stimulant for Cane Sugar Formation in Plants. (I).

(pp. 196~198)

By Tetutaro TADOKORO.

(Hokkaido Imperial University, Received Dec. 19, 1938.)

Chemical Studies on the Kikyo-root. (Report VI.)

Colloid Chemical Studies on Platycodin (Kikyo Saponin).

(pp. 199~205)

By M. TSUJIMOTO, R. SENJU and T. MATSUMOTO.

(Agr. Chem. Laboratory, Kyushu Imp. Univ. and Agr. Chem. Laboratory, Kagoshima Imp. College of Agr. and Forestry.)

SUMMARY.

The following colloid chemical properties of platycodin were examined.

1. Specific surface tension. (Table I)
2. Specific viscosity. (Table II)
3. Intensity of adsorption on animal charcoal.
4. Gold number.

5. Cataphoresis.

6. Liesegang's phenomena.

The experimental results were as follows :

Table I.

Concentration %	Water	0.01	0.02	0.04	0.06	0.08	0.12	0.14	0.16
Specific surf. tension	100.00	99.38	98.69	95.22	93.33	88.90	83.32	81.01	78.83

Table II.

Concentration %	Water	0.010	0.020	0.038	0.055	0.072	0.090	0.110	0.127	0.146	0.166
Specific viscosity	1,000	1.012	1.093	1.213	1.376	1.527	1.674	1.815	1.937	2.131	2.239

The empirical formula of adsorption is $\frac{x}{m} = 0.102C^{0.518}$

The gold number is 16.

Platycodin is a negative colloid.

Liesegang's phenomena are evident.